REMARKS

Applicants' invention relates to a tufted good comprising a greige good comprising fibers tufted into a primary backing and having a face surface and a back surface, a precoat having a face surface and a back surface with the face surface of the precoat being adhered to the back surface of the greige good, and a flexible film laminated to the back surface of the precoat after being treated via corona discharge at a power density of 0.2 to 20 Ws/cm^2. This present invention also relates to a process for producing a tufted good. The process comprises treating a flexible film with corona-discharge at the specified power density, contacting the treated flexible film to the back surface of the uncured or partially cured precoated greige good, and curing the resultant article.

The above amendments to Claims 15, 16 and 25 serve to correct minor deficiencies in the claim language. These amendments place the claims in proper form.

With respect to the restriction requirement under 35 U.S.C. 121 made by the Examiner in the Office Action dated November 26, 2003, Applicants previously confirmed their provisional election to prosecute the invention of Group II (Claims 15-30) in their Amendment filed February 23, 2004 (see page 5, 3rd full paragraph therein).

Claims 15-30 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention. Applicants respectfully submit that these rejections are moot in view of the above amendments to Claims 15, 16 and 25.

Claims 15-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Irwin reference (U.S. Patent 5,612,113) in view of the Langsdorf et al reference (U.S. Patent 6,299,715) and the Nohr et al reference (U.S. Patent 5,578,369).

U.S. Patent 5,612,113 (Irwin) relates to a carpet having a fluid barrier, and is discussed in the present specification on page 2, lines 12-24. As described therein, this reference describes applying a film of liquid impervious material to either the primary backing or to the secondary backing of a carpet to achieve a fluid barrier to prevent liquids which are spilled from penetrating through onto the sub-surface

below the carpet. When a foam layer is present instead of the secondary backing, the film is applied to the inner surface of the primary backing and then the foam is applied (column 2, lines 38-46 therein). This reference broadly discloses that the fluid barrier is applied with adhesives other than hot melt adhesives, and describes polyurethane adhesives as being suitable. It also discloses that corona-treatment of the film on one side may be sufficient to make it bondable to the backing. (See column 4, lines 15-20 and lines 36-38.)

The Langsdorf et al reference (U.S. Patent 6,299,715) describes urethane adhesive laminated carpeting. These polyurethane carpet laminating systems use only one polyurethane adhesive puddle. The resultant carpet laminates exhibit acceptable tuft bind and initial secondary backing adhesion, while having lower weight and a lower cost due to the decrease in amount of polyurethane used.

The Nohr et al reference is directed to a method for laminating products and to the resultant laminates. These laminates are composed of at least two layers of sheet materials, and possibly three layers of sheet materials, but the reference is not specific to tufted goods. The method comprises (A) applying an adhesive composition to a surface of a first sheet material; (B) exposing the adhesive composition on the surface of the first sheet material to incoherent, pulsed ultraviolet radiation from a dielectric barrier discharge excimer lamp; (C) bringing a surface of the second sheet material in contact with the adhesive composition-bearing surface of the first sheet material; and (D) allowing the adhesive composition to cure. The incoherent, pulsed ultraviolet radiation has a wavelength of from about 260 to about 360 nanometers. In this process, when sheet materials are primarily composed of a polyolefin, it is described as being desirable to oxidize the surfaces of the sheet for better wetting by the adhesive composition. This is typically done by subjecting the sheet to corona discharge at power densities of from about 2 to about 10 kW/m^2. After this, the adhesive composition is applied to the surface of the sheet material, and it is exposed to incoherent, pulsed ultraviolet radiation as described above.

Applicants respectfully submit that the presently claimed invention is not rendered obvious by this combination of references.

The presently claimed process for producing a tufted good comprises (A) treating a flexible film with corona-discharge at the specified power density, (B) contacting the film with the uncured or partially cured back surface of a precoated

greige good, and (C) curing the resultant article. As discussed previously by Applicants in their amendment dated February 23, 2003, the greige good (i.e. a primary backing with tufted yarns) is precoated with a (preferably) polyurethane precoat formulation. After the flexible film is treated with corona discharge at the specified power intensity, the film is contacted with the precoat, and the resultant article cured. The presently claimed process results in tufted goods which exhibit improved dimensional stability, even without the use of secondary backing. Cured articles of the present invention exhibit delamination strength which exceeds that of conventional tufted goods. (See page 2, line 25 through page 3, line 7).

It is broadly disclosed by the Irwin Sr., reference to add a film as a barrier layer to carpet products. These carpets may comprise a primary backing with tufted yarn, a precoat, a conventional secondary backing and a film of an impervious material; or a primary backing with tufted yarn, a precoat, and a film of an impervious material; or a primary backing with tufted yarn, a precoat, a film of an impervious material and a foam layer (column 2, lines 38-46). Suitable films comprise polyethylene, polypropylene, polyurethane polyester, polyvinylchloride (PVC), etc. and combinations thereof, and the thickness of the films may vary from 1 to 5 mils, with 1.5 mils being preferred (column 2, lines 46-56). The film is generally applied between the primary backing before the secondary backing, or to the back side of the secondary backing. A hot melt adhesive may be used to secure the film to the primary backing or to the secondary backing (column 3, lines 4-20).

When applying a foam cushion to the carpet instead of a conventional secondary backing, the fluid barrier (film) is between the foam cushion and the primary backing. In this embodiment, a film comprising a non-woven or woven fabric on both sides is preferably used for maximum bonding. In this respect, it is broadly disclosed by the Irwin, Sr. reference that corona-treatment of one side of the film may be sufficient to render it bondable to the backing (column 4, lines 35-38).

It is well known by one of ordinary skill in the art that latex, polyurethane and other types of precoats and foams must be cured after they are applied. Depending on the construction of the carpet product and the specific layers involved, the precoat and/or foam may be cured by heat including hot air (moist or dry), microwave energy, RF energy, electron beam, UV (ultra-violet) laser beam, infrared heat, etc. The Langsdorf et al reference discloses various heat sources for curing, including

those mentioned above (column 4, lines 36-46). Corona discharge treatment of films in laminated carpets in not disclosed by this reference.

The Examiner describes that the Nohr et al reference as supporting his position that it is "notoriously well known and conventional that corona discharge treating a film increases its adhesive properties and furthermore it is known in the art to increase the adhesion of polyolefin films, such as polypropylene, to adhesives by treating the polyolefin film with corona discharge with a power density between 2 and 10 kW/m^2". Applicants respectfully disagree with this interpretation of the Nohr et al reference.

The Nohr et al reference does **not** disclose anything about corona discharge treatment of films increasing their adhesive properties! This reference expressly discloses that the surfaces of the polyolefin sheet are treated with corona discharge "to ensure wettability of its surfaces by the adhesive composition" (see column 6, lines 41-42). It is readily apparent that the process or method of the Nohr et al reference still requires application of the adhesive composition to the corona-discharge treated surface, and exposing the adhesive to incoherent, pulsed ultraviolet radiation! Once all these steps are completed, the sheet materials are brought together to form the laminate. (See column 6, lines 46-53).

Excellent adhesion between sheet materials of the laminates in the Nohr et al reference is attributed to the exposure of the adhesive composition to ultraviolet radiation! Contrary to what was expected, the Nohr et al reference discloses that at a given UV radiation exposure period, a lower UV radiation power density source provided a better cure rate and better adhesion. See column 6, lines 60-65 therein. Applicants respectfully submit that this reference clearly states that the adhesion is improved by exposure to UV radiation at a lower power density for a specific exposure period.

Any improvement in adhesion illustrated by the Nohr process is attributed to exposing the adhesive composition to UV radiation, **not** to corona discharge treatment of the surface of the polyolefin sheet! Accordingly, the Examiner's assertion that it is well known from the Nohr et al reference to increase adhesion properties by treating films with corona discharge is not correct!

Combining this reference with the Irwin, Sr. reference and the Langsdorf et al reference simply does **not** suggest the presently claimed invention to one of ordinary

skill in the art. Rather, combining the Nohr et al reference with the other two references would lead the skilled artisan to conclude that an adhesive should be applied to the film in the Irwin Sr., reference, and this adhesive should be exposed to incoherent, pulsed ultraviolet radiation to improve the adhesion and/or bonding. This is particularly true in light of the fact that adhesives disclosed by both references include vinyl chlorides, vinyl acetates, etc.

Applicants respectfully submit that the disclosure of a specific corona discharge rate by the Nohr et al reference is of no more relevance to the patentability of the present invention than the disclosure of this same corona discharge rate by numerous other references. This reference simply does not even suggest or imply that corona discharge treatment of films improves the bond strength! At best, the Examiner is applying "an obvious to try" standard of patentability in relying on the Nohr et al reference.

The presently claimed invention is not fairly suggested to one of ordinary skill in the art by this combination of references. Rather, this combination results in a process that not only requires corona discharge treatment of the film, but also requires an adhesive to be applied and exposed to incoherent, pulsed, ultra-violet radiation for a pre-determined time and rate of power. This ultra-violet radiation is what is disclosed in the Nohr et al reference as improving the bond strength. Applicants respectfully submit that this combination of references simply does not lead one of ordinary skill in the art to reasonably expect or believe that treating the films of the Irwin Sr. reference with corona discharge at the rate disclosed by the Nohr et al reference would improve the delamination strength of the resultant tufted goods as in the present invention.

The examples of the present application illustrate the improved delamination strength. A foam cushion formulation was applied to a treated film and a precoat formulation was applied to a treated film, cured and tested for delamination strength. (See page 9, line 10 through page 13, line 8). As seen in Table 2 on page 13, the delamination strengths of the foam cushions/corona-discharge treated films and the precoats/corona-discharge treated films increased substantially. Specifically, the high density polyethylene film in combination with the foam cushion formulation showed an increase in delamination strength from 0.04 lbs/in to 5.4 lbs/in (135 times higher), and the low density polyethylene film in combination with the precoat

formulation showed an increase in delamination strength from 0.3 to > 11.4 lbs/in (38 times higher). In fact, in this film/precoat, the sample could not be delaminated without destroying the sample! (See page 13, line 4.) Applicants respectfully submit that this is simply not suggested by the Irwin Sr. reference, alone or combined with the Langsdorf et al and/or the Nohr et al references.

This combination of references does not provide a reasonable basis for the skilled artisan to expect that delamination strength can be improved substantially by corona discharge treatment of the film. This is simply not supported by these references!

One of ordinary skill in the art seeking to improve the bond strengths in the Irwin Sr. and Langsdorf et al references would believe from the Nohr et al reference that ultra-violet radiation of the adhesive is necessary! This is not, however, required by the presently claimed invention!

Applicants invention, however, provides improved delmination strength of the resultant tufted goods. One of ordinary skill in the art simply would not believe and/or expect this upon reading this combination of references. Therefore, it is respectfully submitted that the presently claimed invention is not rendered obvious by the Irwin Sr., the Langsdorf et al and the Nohr et al references.

Claims 25-30 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Langsdorf et al reference (U.S. Patent 6,299,715) in view of the Irwin reference (U.S. Patent 5,612,113) and the Nohr et al reference (U.S. Patent 5,578,369).

Claims 25-30 of the present invention relate to a process for producing tufted goods comprising (A) treating a flexible film with corona-discharge at the specified power density, (B) contacting the treated flexible film with the uncured or partially cured back surface of a foam layer which is adhered to a greige good, and (C) curing the article formed in (B). In this embodiment, a foam cushion layer is applied to the back side of the greige good, and the treated flexible film is contacted with this foam cushion layer either before it is cured or after it is partially cured. Then, the entire article is cured.

Applicants respectfully submit that the Langsdorf et al reference is not particularly pertinent to the patentability of the presently claimed invention. This reference, as briefly discussed above, applies a polyurethane adhesive (via a

puddle) to the reverse side of the greige good, passes the coated greige good under a doctor blade, contacts the reverse side of the coated greige good with a skip-coated secondary backing, passes the carpeting through a pair of marriage rollers or equivalent devices and into an oven for curing (column 4, lines 9-29).

As previously discussed, the purpose of the flexible film in the Irwin et al reference is to serve as a barrier against fluids contacting either the foam cushion layer or the subsurface under the carpet (column 2, lines 38-42). There is no suggestion in this reference that the flexible film may add dimensional stability to the carpet product in the absence of a secondary backing.

The Nohr et al reference (also discussed above) discloses corona discharge treatment of films, but it also expressly discloses that the adhesion is improved by exposing the adhesive to ultra-violet radiation. Improvement in adhesion or bonding by treating a film to a specific power density of corona discharge is simply not disclosed or suggested in the Nohr et al reference.

This combination of references does not fairly suggest the presently claimed invention. Rather, this combination of references leads the skilled artisan to expect that the adhesive of the Langsdorf et al reference should be exposed to ultra-violet radiation as described in the Nohr et al reference if one desires to improve the bond strength of urethane-adhesive laminated carpeting. This is not the present invention!

Applicants respectfully submit that one of ordinary skill in the art simply could not expect to improve the delamination strength of the carpeted goods in either the Langsdorf et al or the Irwin Sr. references by treating the film with corona discharge, even if one used the power density disclosed in the Nohr et al reference. The Nohr et al reference does not disclose this as a means on improving bond strength or delamination strength!

For these reasons as well as those discussed hereinabove with respect to the obviousness rejection of Claims 15-24, Applicants respectfully submit that one of ordinary skill in the art simply would not expect treating the film with corona discharge to provide any increase in delamination strength. Only after reading Applicants' specification does this become "obvious". Such a perspective does not, however, provide a proper basis for a rejection of the claimed invention under 35 U.S.C. 103(a)!

It is respectfully submitted that this combination of references does not fairly suggest the invention to one of ordinary skill in the art. Accordingly, Applicants respectfully submit that the present rejection is improper and request that it be withdrawn.

In view of the preceding amendments and remarks, Applicants submit that each of these rejections is in error and request that these be withdrawn. The allowance of Claims 15-30 is respectfully requested.

Respectfully submitted,

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